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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Gerd Roland MEYER, et al. : Attorney Docket: 2001DE453

Serial No.: to be assigned :

Filed: June 22, 2004 :

For: Plant-Protective Agents in the Form of Suspensions

Transmittal Letter
Notification of Amendments Under PCT Article 34

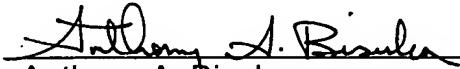
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Dear Sir:

Preliminary to the examination of the above-identified application, an Amendment was filed under Article 34 of the Patent Cooperation Treaty prior to the International Preliminary Examination. Please note that the attached pages 17 – 22 of the claims were filed with the European Patent Office. We enclose a copy of the above-mentioned pages for your convenience.

Applicant respectfully requests submission of these pages before examination of the application and before entry of the Preliminary Amendment.

Respectfully submitted,



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WHAT IS CLAIMED IS:

1. An aqueous plant protection formulation in the form of a suspension comprising at least one polymer which can be prepared by radical copolymerization of

5 A) acrylamidopropylmethylenesulfonic acid (AMPS) and/or its salts;

B) one or more macromonomers comprising

10 i) a terminal group which is capable of polymerizing and which is at least partially soluble in the reaction medium,

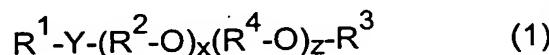
ii) a hydrophobic part which is hydrogen or a saturated or unsaturated, linear or branched, aliphatic, cycloaliphatic or aromatic (C₁-C₁₀₀)-hydrocarbon residue, and

15 iii) optionally a hydrophilic part based on polyalkylene oxides; and

15 C) optionally one or more other at least mono- or polyolefinically unsaturated oxygen-, nitrogen-, sulfur-, phosphorus-, chlorine- and/or fluorine-comprising comonomers.

20 2. A plant protection formulation as claimed in claim 1, wherein the comonomer A) is the sodium salt and/or ammonium salt of acrylamidopropylmethylenesulfonic acid (AMPS).

25 3. A plant protection formulation as claimed in claim 1 and/or 2, wherein the macromonomers B) are those according to formula (1)



30 in which

R^1 is a vinyl, allyl, acryloyl, methacryloyl, senecioyl or crotonyl residue;

R^2 and R^4 are, independently of one another, (C₂-C₄)-alkylene;

x and z are, independently of one another, an integer between 0 and 500, preferably with x+z greater than or equal to 1;

35 Y is O, S, PH or NH, preferably O; and

R^3 is hydrogen or a saturated or unsaturated, linear or branched, aliphatic, cycloaliphatic or aromatic (C₁-C₁₀₀)-hydrocarbon residue, preferably (C₁-C₃₀)-hydrocarbon residue.

5 4. A plant protection formulation as claimed in claim 3, wherein
 R^1 is an acryloyl or methacryloyl residue;
 R^2 and R^4 are, independently of one another, C₂-alkylene or C₃-alkylene;
 x and z are, independently of one another, an integer between 0 and 50, preferably with $x+z$ greater than or equal to 1;

10 R^3 is an aliphatic (C₄-C₂₂)-alkyl or -alkenyl residue, preferably (C₁₀-C₂₂)-alkyl or -alkenyl residue; a phenyl residue;
a (C₁-C₂₂)-alkylphenyl residue, preferably sec-butyl- or n-butylphenyl residue; a poly((C₁-C₂₂)-alkyl)phenyl residue, preferably tris(sec-butyl)phenyl residue or tris(n-butyl)phenyl residue; or a polystyrylphenyl residue, preferably tristyrylphenyl residue.

15 5. A plant protection formulation as claimed in claim 4, wherein the R^3 residue is a 2,4,6-tris(sec-butyl)phenyl residue or 2,4,6-tris(1-phenylethyl)phenyl residue.

20 6. A plant protection formulation as claimed in claim 1, wherein the polymers can be prepared by radical copolymerization of
A) acrylamidopropylmethylenesulfonic acid (AMPS), the sodium salt of acrylamidopropylmethylenesulfonic acid (AMPS) and/or the ammonium salt of acrylamidopropylmethylenesulfonic acid, preferably the ammonium salt of acrylamidopropylmethylenesulfonic acid (AMPS);
B) one or more macromonomers chosen from the group of the esters formed from methacrylic acid or acrylic acid, preferably methacrylic acid, and compounds of the formula (2)

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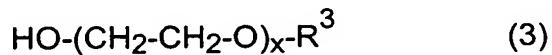
$$\text{HO-(CH}_2\text{-CH}_2\text{-O)}_x\text{-R}^3 \quad (2)$$

35 in which x is a number between 0 and 50, preferably 1 and 50, particularly preferably 5 and 30, and R^3 is a (C₁₀-C₂₂)-alkyl residue; and

5 C) optionally one or more comonomers chosen from the group consisting of acrylamide, vinylformamide, N-vinylmethylacetamide, sodium methallylsulfonate, hydroxyethyl methacrylate, acrylic acid, methacrylic acid, maleic anhydride, methacrylamide, vinyl acetate, N-vinylpyrrolidone, vinylphosphonic acid, styrene, styrenesulfonic acid (Na salt), t-butyl acrylate and methyl methacrylate.

7. A plant protection formulation as claimed in at least one of claims 1 to 6, wherein the macromonomers B) are esters formed from acrylic acid or 10 methacrylic acid and alkyl ethoxylates chosen from the group of the (C₁₀-C₁₈)-fatty alcohol polyglycol ethers with 8 EO units, C₁₁-oxo alcohol polyglycol ethers with 8 EO units, (C₁₂-C₁₄)-fatty alcohol polyglycol ethers with 7 EO units, (C₁₂-C₁₄)-fatty alcohol polyglycol ethers with 11 EO units, (C₁₆-C₁₈)-fatty alcohol polyglycol ethers with 8 EO units, 15 (C₁₆-C₁₈)-fatty alcohol polyglycol ethers with 15 EO units, (C₁₆-C₁₈)-fatty alcohol polyglycol ethers with 11 EO units, (C₁₆-C₁₈)-fatty alcohol polyglycol ethers with 20 EO units, (C₁₆-C₁₈)-fatty alcohol polyglycol ethers with 25 EO units, (C₁₈-C₂₂)-fatty alcohol polyglycol ethers with 25 EO units and/or 20 C₂₂-fatty alcohol polyglycol ethers with 25 EO units.

8. A plant protection formulation as claimed in claim 1, wherein the polymers can be prepared by radical copolymerization of 25 A) acrylamidopropylmethylenesulfonic acid (AMPS), the sodium salt of acrylamidopropylmethylenesulfonic acid (AMPS) and/or the ammonium salt of acrylamidopropylmethylenesulfonic acid, preferably the ammonium salt of acrylamidopropylmethylenesulfonic acid (AMPS); 30 B) one or more macromonomers chosen from the group of the esters formed from methacrylic acid or acrylic acid, preferably methacrylic acid, and compounds of the formula (3)



35 in which
x is a number between 0 and 50, preferably 1 and 50, particularly preferably 5 and 30, and

R^3 is a poly((C₁-C₂₂)-alkyl)phenyl residue, preferably tris(sec-butyl)phenyl residue or tris(n-butyl)phenyl residue, particularly preferably 2,4,6-tris(sec-butyl)phenyl residue, or a tris(styryl)phenyl residue, preferably 2,4,6-tris(1-phenylethyl)phenyl residue; and

5 C) optionally one or more comonomers chosen from the group consisting of acrylamide, vinylformamide, N-vinylmethylacetamide, sodium methallylsulfonate, hydroxyethyl methacrylate, acrylic acid, methacrylic acid, maleic anhydride, methacrylamide, vinyl acetate, N-vinylpyrrolidone, vinylphosphonic acid, styrene, styrenesulfonic acid (Na salt), t-butyl acrylate and methyl methacrylate.

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9. A plant protection formulation as claimed in at least one of claims 1 to 8, wherein the proportion of macromonomers B) in the polymers is 50.1 to 99.9 % by weight, preferably 70 to 95 % by weight, particularly preferably 15 80 to 94 % by weight.

10. A plant protection formulation as claimed in at least one of claims 1 to 8, wherein the proportion of macromonomers B) in the polymers is 0.1 to 50 % by weight, preferably 5 to 25 % by weight, particularly preferably 20 6 to 20 % by weight.

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11. A plant protection formulation as claimed in at least one of claims 1 to 9, wherein the number-average molecular weight of the polymers is 1000 to 20 000 000 g/mol, preferably 20 000 to 5 000 000 g/mol, particularly 25 preferably 50 000 to 1 500 000 g/mol.

12. A plant protection formulation as claimed in at least one of claims 1 to 11, wherein the polymers are crosslinked.

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13. A plant protection formulation as claimed in at least one of claims 1 to 12, the copolymerization being a precipitation polymerization, preferably in tert-butanol.

25

14. A plant protection formulation as claimed in at least one of claims 1 to 13, which is a suspension concentrate.

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15. A suspension concentrate as claimed in claim 14, wherein the water content, based on the ready-mix formulation, is 10 to 50 % by weight,

preferably 10 to 45 % by weight, particularly preferably 25 to 45 % by weight.

16. A suspension concentrate as claimed in claim 14 and/or 15, wherein
5 the proportion of the polymers, based on the ready-mix formulation, is 0.01
to 10 % by weight, preferably 0.01 to 5 % by weight.

17. A suspension concentrate as claimed in at least one of claims 1 to
10 16, which additionally comprises at least one dispersing agent.

18. A suspension concentrate as claimed in claim 17, which comprises, as
15 dispersing agent, phosphoric acid esters and phosphoric acid ester salts
of fatty alcohols and fatty alcohol alkoxylates, preferably poly(arylalkyl)phenol polyethylene glycol phosphoric acid esters and
tristyryl polyglycol ether phosphates; methoxycarbonylcellulose; methylcellulose; starch; alginates; sulfonated naphthalene-formaldehyde
condensates; lignosulfonates; polyvinylpyrrolidone and/or polyvinyl alcohol.

19. A suspension concentrate as claimed in at least one of claims 14 to
20 18, which comprises, based on the ready-mix suspension concentrate, 0.5
to 10 % by weight, particularly preferably 0.5 to 5 % by weight, of
dispersing agents and 0.01 to 2.5 % by weight, preferably 0.025 to 1 % by
weight, of polymers.

25 20. A suspension concentrate as claimed in at least one of claims 14 to
19, wherein the proportion of pesticides, based on the ready-mix
suspension concentrate, is 10-90 % by weight, preferably 30 to 60 % by
weight, particularly preferably 40 to 50 % by weight.

30 21. A plant protection formulation as claimed in at least one of claims 1
to 20, which comprises at least one pesticide which is sparingly soluble in
water.

35 22. A plant protection formulation as claimed in at least one of claims 1
to 21, which comprises at least one pesticide which is sparingly soluble in
water and at least one pesticide which is readily soluble in water.

23. Use of polymers which can be prepared by radical copolymerization of

A) acrylamidopropylmethylenesulfonic acid (AMPS) and/or its salts;

B) one or more macromonomers comprising

5 i) a terminal group which is capable of polymerizing and which is at least partially soluble in the reaction medium,

ii) a hydrophobic part which is hydrogen or a saturated or unsaturated, linear or branched, aliphatic, cycloaliphatic or aromatic (C₁-C₁₀₀)-hydrocarbon residue, and

10 iii) optionally a hydrophilic part based on polyalkylene oxides; and

C) optionally one or more other at least mono- or polyolefinically unsaturated oxygen-, nitrogen-, sulfur-, phosphorus-, chlorine- and/or fluorine-comprising comonomers,

15 for increasing the suspensibility of plant protection formulations present in the form of suspensions.

24. The use as claimed in claim 23, wherein the plant protection formulations are suspension concentrates.